

METHOD AND APPARATUS FOR PROVIDING A SIMULATION OF A WELDING PROCESS USING INTEGRATED MODELS

A method and apparatus for providing a simulation of a welding process using integrated models which are interconnected by an interconnection tool to determine stresses and distortions of a material being welded. The method and apparatus includes determining a model of a geometry of a set of materials to be welded, defining a set of coordinates of elements and nodes of the geometry model for a finite element analysis mesh, delivering the finite element analysis mesh coordinates to a thermal analysis model, the thermal analysis model including an analytical solution model and a finite element analysis model, and determining a thermal analysis of the welding process, the thermal analysis responsively providing a thermal history of the welding process. The method and apparatus further includes delivering the thermal history of the welding process to a structural analysis model, and providing a structural analysis of the welding process as a function of the thermal history.